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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,658	04/21/2005	Marco Romagnoli	05788.0317	4813

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EXAMINER	
WONG, TINA MEI SENG	

ART UNIT	PAPER NUMBER
2874	

DATE MAILED: 08/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/506,658	ROMAGNOLI ET AL.	
	Examiner	Art Unit	
	Tina M. Wong	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *3 September 2006 (preliminary amendment)*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *21-29* is/are allowed.

6)☒ Claim(s) *30 and 40* is/are rejected.

7)☒ Claim(s) *31-39* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/3/04, 4/21/05, 11/2/05*
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt from the International Bureau is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d) in this national stage application, which papers have been placed of record in the file.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 30 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 28 of copending Application No. 10/506,769. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 28 of the '769 application recite all of the elements, almost word for word, as the current application's claim 30.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim 30 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 18 of copending Application No. 10/506,542. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 18 of the '542 application recite all of the elements, almost word for word, as the current application's claim 30.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 40 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. Patent 5,999,308 to Nelson et al.

In regards to claim 40, Nelson et al discloses a device for guiding electromagnetic radiation (Column 2, Lines 45-50) comprising a waveguide (14) optically coupled to a photonic crystal (10) having a regular periodicity (Column 6, Lines 9-16). (Figure 2)

Allowable Subject Matter

Claims 31-39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record fails to disclose or reasonably suggest all of the limitations of the base claim (30) and any intervening claims (none). Regarding independent claim 30, although claim 30 has been rejected above on the grounds of nonstatutory obviousness-type double patenting over two different co-pending applications, there is no art rejection regarding claim 30. The prior art fails to disclose or reasonably suggest a device for guiding electromagnetic radiation in a photonic crystal including all of the limitations of base claim 30 but more specifically, the prior art does not teach the precise relationships as claimed. Applicant claims the wavelength being related to a difference between said first and second refractive indices, to dimensions of said regions and to a period of said array that, starting from an isotropic distribution of wave vectors, having group velocity vectors which correspond to the vectors, of said electromagnetic radiation within a first angular range that is twice an angular extension of a first irreducible Brillouin zone of the photonic crystal, the group velocity vectors corresponding to said wave vectors being rearranged as concerns direction and module so that at least 50% of the vectors are directed within a second angular range that is about one-third of the angular range and a width at half-maximum of the distribution of the modules of the vectors is lower than about two-thirds of the second angular range.

Although the prior art discloses the basic structure of the photonic crystal as claimed by Applicant, none of the prior art documents disclose or suggest the specific relationship of the

characteristics of the photonic crystal as claimed by Applicant. U.S. Patent 5,999,508 to Nelson et al and U.S. Patent 6,738,551 to Noda et al both disclose photonic crystals with a period array, however, neither prior art reference discloses or suggests the specific relationships as claimed.

Claims 21-29 are allowed. The prior art of record fails to disclose or reasonably suggest a method for guiding electromagnetic radiation in a photonic crystal having a predetermined dimensioned periodic array of regions, each region having a different refractive index but more specifically, the prior art does not teach the precise relationships as claimed. Applicant claims the wavelength being related to a difference between said first and second refractive indices, to dimensions of said regions and to a period of said array that, starting from an isotropic distribution of wave vectors, having group velocity vectors which correspond to the vectors, of said electromagnetic radiation within a first angular range that is twice an angular extension of a first irreducible Brillouin zone of the photonic crystal, the group velocity vectors corresponding to said wave vectors being rearranged as concerns direction and module so that at least 50% of the vectors are directed within a second angular range that is about one-third of the angular range and a width at half-maximum of the distribution of the modules of the vectors is lower than about two-thirds of the second angular range.

Although the prior art discloses the basic structure of the photonic crystal as claimed by Applicant, none of the prior art documents disclose or suggest the specific relationship of the characteristics of the photonic crystal as claimed by Applicant. U.S. Patent 5,999,508 to Nelson et al and U.S. Patent 6,738,551 to Noda et al both disclose photonic crystals with a period array, however, neither prior art reference discloses or suggests the specific relationships as claimed.

Prior Art

The documents submitted by applicant in the Information Disclosure Statements have been considered and made of record. Note attached copies of forms PTO-1449. None of the documents submitted by Applicant discloses or reasonably suggests the allowable subject matter discussed above.

Inventorship

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tina M. Wong whose telephone number is (571) 272-2352. The examiner can normally be reached on Monday-Friday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tina M Wong
Patent Examiner
Art Unit 2874